

1. Work requester fills out this section.

☐ Standing Work Permit

Requester: Don Lynch	Date: 9/7/07	Ext.: 2253	Dept/Div/Group: PO/PHENIX
Other Contact person (if different from requester): Mike Leitch			Ext.: 8414
Work Control Coordinator: Don Lynch		Start Date: 9/10/07	Est. End Date: 12/31/07
Brief Description of Work: Erect low work platform to aid in reaching low MuTr capacitors for removal			
Building: 1008	Room: IR	Equipment: MuTr Station 3 North	Service Provider: PHENIX Techs

WCC, Requester/Designee, Service Provider, and ES&H (as necessary) fill out this section or attach analysis

ES&H ANALYSIS					
Radiation Concerns		<input checked="" type="checkbox"/> None	<input type="checkbox"/> Activation	<input type="checkbox"/> Airborne	<input type="checkbox"/> Contamination
Radiation Generating Devices:		<input type="checkbox"/> Radiography	<input type="checkbox"/> Moisture Density Gauges	<input type="checkbox"/> Soil Density Gauges	<input type="checkbox"/> X-ray Equipment
<input type="checkbox"/> Special nuclear materials involved, notify Isotope Special Materials Group			<input type="checkbox"/> Fissionable materials involved, notify Laboratory Criticality Officer		
Safety Concerns		<input checked="" type="checkbox"/> None	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Transport of Haz/Rad Material	
<input type="checkbox"/> Adding/Removing Walls or Roofs	<input checked="" type="checkbox"/> Confined Space*	<input type="checkbox"/> Explosives	<input type="checkbox"/> Lead*	<input type="checkbox"/> Penetrating Fire Walls	
	<input type="checkbox"/> Corrosive	<input type="checkbox"/> Flammable	<input type="checkbox"/> Magnetic Field*	<input type="checkbox"/> Pressurized Systems	
<input type="checkbox"/> Asbestos*	<input type="checkbox"/> Cryogenic	<input type="checkbox"/> Fumes/Mist/Dust*	<input type="checkbox"/> Material Handling	<input type="checkbox"/> Rigging/Critical Lift	
<input type="checkbox"/> Beryllium*	<input type="checkbox"/> Electrical	<input type="checkbox"/> Heat/Cold Stress	<input type="checkbox"/> Noise*	<input type="checkbox"/> Toxic Materials*	
<input type="checkbox"/> Biohazard*	<input type="checkbox"/> Elevated Work*	<input type="checkbox"/> Hydraulic	<input type="checkbox"/> Non-ionizing Radiation*	<input type="checkbox"/> Vacuum	
<input type="checkbox"/> Chemicals*	<input type="checkbox"/> Excavation	<input type="checkbox"/> Lasers*	<input type="checkbox"/> Oxygen Deficiency*	<input type="checkbox"/> Other	
* Does this work require medical clearance or surveillance from the Occupational Medicine Clinic? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
Environmental Concerns		<input checked="" type="checkbox"/> None	<input type="checkbox"/> Work impacts Environmental Permit No.		
<input type="checkbox"/> Atmospheric Discharges (rad/non-rad)	<input type="checkbox"/> Land Use	<input type="checkbox"/> Soil Activation/contamination	<input type="checkbox"/> Waste-Mixed		
<input type="checkbox"/> Chemical or Rad Material Storage or Use	<input type="checkbox"/> Liquid Discharges	<input type="checkbox"/> Waste-Clean	<input type="checkbox"/> Waste-Radioactive		
<input type="checkbox"/> Cesspools (UIC)	<input type="checkbox"/> Oil/PCB Management	<input type="checkbox"/> Waste-Hazardous	<input type="checkbox"/> Waste-Regulated Medical		
<input type="checkbox"/> High water/power consumption	<input type="checkbox"/> Spill potential	<input type="checkbox"/> Waste-Industrial	<input type="checkbox"/> Underground Duct/Piping		
Waste disposition by:		<input type="checkbox"/> Other			
Pollution Prevention (P2)/Waste Minimization Opportunity:		<input checked="" type="checkbox"/> None <input type="checkbox"/> Yes			
FACILITY CONCERNS		<input checked="" type="checkbox"/> None			
<input type="checkbox"/> Access/Egress Limitations	<input type="checkbox"/> Electrical Noise	<input type="checkbox"/> Potential to Cause a False Alarm		<input type="checkbox"/> Vibrations	
	<input type="checkbox"/> Impacts Facility Use Agreement		<input type="checkbox"/> Temperature Change	<input type="checkbox"/> Other	
<input type="checkbox"/> Configuration Control	<input type="checkbox"/> Maintenance Work on Ventilation Systems		<input type="checkbox"/> Utility Interruptions		
WORK CONTROLS					
Work Practices					
<input checked="" type="checkbox"/> None	<input type="checkbox"/> Exhaust Ventilation	<input type="checkbox"/> Lockout/Tagout	<input type="checkbox"/> Spill Containment	<input type="checkbox"/> Security (see Instruction Sheet)	
<input checked="" type="checkbox"/> Back-up Person/Watch	<input type="checkbox"/> HP Coverage	<input type="checkbox"/> Posting/Warning Signs	<input type="checkbox"/> Time Limitation	<input type="checkbox"/> Other	
<input type="checkbox"/> Barricades	<input type="checkbox"/> IH Survey	<input type="checkbox"/> Scaffolding-requires inspection	<input type="checkbox"/> Warning Alarm (i.e. "high level")		
Protective Equipment					
<input type="checkbox"/> None	<input type="checkbox"/> Ear Plugs	<input type="checkbox"/> Gloves	<input type="checkbox"/> Lab Coat	<input checked="" type="checkbox"/> Safety Glasses	
<input type="checkbox"/> Coveralls	<input type="checkbox"/> Ear Muffs	<input type="checkbox"/> Goggles	<input type="checkbox"/> Respirator	<input type="checkbox"/> Safety Harness	
<input type="checkbox"/> Disposable Clothing	<input type="checkbox"/> Face Shield	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Shoe Covers	<input checked="" type="checkbox"/> Safety Shoes	<input type="checkbox"/> Other
Permits Required (Permits must be valid when job is scheduled.)					
<input checked="" type="checkbox"/> None	<input type="checkbox"/> Cutting/Welding	<input type="checkbox"/> Impair Fire Protection Systems			
<input type="checkbox"/> Concrete/Masonry Penetration	<input type="checkbox"/> Digging/Core Drilling	<input type="checkbox"/> Rad Work Permit-RWP No			
<input checked="" type="checkbox"/> Confined Space Entry	<input type="checkbox"/> Electrical Working Hot	<input type="checkbox"/> Other			
Dosimetry/Monitoring					
<input checked="" type="checkbox"/> None	<input type="checkbox"/> Heat Stress Monitor	<input type="checkbox"/> Real Time Monitor	<input type="checkbox"/> TLD		
<input type="checkbox"/> Air Effluent	<input type="checkbox"/> Noise Survey/Dosimeter	<input type="checkbox"/> Self-reading Pencil Dosimeter	<input type="checkbox"/> Waste Characterization		
<input type="checkbox"/> Ground Water	<input type="checkbox"/> O ₂ /Combustible Gas	<input type="checkbox"/> Self-reading Digital Dosimeter	<input type="checkbox"/> Other		
<input type="checkbox"/> Liquid Effluent	<input type="checkbox"/> Passive Vapor Monitor	<input type="checkbox"/> Sorbent Tube/Filter Pump			
Training Requirements (List below specific training requirements)					
PHENIX Awareness, CA User Training, Confined space training					
Based on analysis above, the Walkdown Team determines the risk, complexity, and coordination ratings below:			If using the permit when all hazard ratings are low, only the following need to sign: (Although allowed, there is no need to use back of form)		
ES&H Risk Level:	<input checked="" type="checkbox"/> Low	<input type="checkbox"/> Moderate	<input type="checkbox"/> High	WCC:	Date:
Complexity Level:	<input checked="" type="checkbox"/> Low	<input type="checkbox"/> Moderate	<input type="checkbox"/> High	Service Provider:	Date:
Work Coordination:	<input checked="" type="checkbox"/> Low	<input type="checkbox"/> Moderate	<input type="checkbox"/> High	Authorization to start	Date:
(Departmental Sup/WCC/Designee)					

3. Both work requester and service provider contribute to work plan (use attachments for detailed plans)

Work Plan (procedures, timing, equipment, and personnel availability need to be addressed): This work plan is supplemental and subsidiary to work permit numbers SS-2007-248 and SS-2007-249 Also see attached additional documentation.				
Special Working Conditions Required:				
Operational Limits Imposed:				
Post Work Testing Required:				
Job Safety Analysis Required: <input type="checkbox"/> Yes <input type="checkbox"/> No			Walkdown Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Reviewed by: Primary Reviewer will determine the size of the review team and the other signatures required based on hazards and job complexity. Primary Reviewer signature means that the hazards and risks that could impact ES&H have been identified and will be controlled according to BNL requirements.				
Title	Name (print)	Signature	Life #	Date
Primary Reviewer				
ES&H Professional				
Other				
Other				
Work Control Coordinator				
Service Provider				
	Review Done: <input type="checkbox"/> in series <input type="checkbox"/> team			

4. Job site personnel fill out this section.

Note: Signature indicates personnel performing work have read and understand the hazards and permit requirements (including any attachments).			
Job Supervisor:		Contractor Supervisor:	
Workers:	Life#:	Workers :	Life#:
Workers are encouraged to provide feedback on ES&H concerns or on ideas for improved job work flow. Use feedback form or space below.			

5. Departmental Job Supervisor, Work Control Coordinator/Designee

Conditions are appropriate to start work: (Permit has been reviewed, work controls are in place and site is ready for job.)			
Name:	Signature:	Life#:	Date:

6. Departmental Job Supervisor, Work Requester/Designee determines if Post Job Review is required. ☐ Yes ☐ No

Post Job Review (Fill in names of reviewers)			
Name:	Signature:	Life#:	Date:
Name:	Signature:	Life#:	Date:

7. Worker provides feedback.

Worker Feedback (use attached sheets as necessary)	
a) WCM/WCC: Is any feedback required? <input type="checkbox"/> Yes <input type="checkbox"/> No	
b) Workers: Are there better methods or safer ways to perform this job in the future? <input type="checkbox"/> Yes <input type="checkbox"/> No	

8. Closeout: Work Control Coordinator (authorizing dept.) checks quality of completed permit and ensures the work site is left in an acceptable condition. (WCC can delegate clean up of work area to work supervisor)

Name:	Signature:	Life#:	Date:
Comments:			

MuTr Chip Capacitor removal, Station 3 North access platform**INTRODUCTION**

The PHENIX MuTr experts have developed a new technique to safely remove high-voltage surface mount chip capacitors, from anode wire circuit cards - that are a part of the station 3 tracking chambers - mounted to the back wall of the north and south muon magnets. Station 3 North has 10 anode cards per wire plane, 9 cards have 32 capacitors, one card has 29 caps (remaining wires used for calibration pulses).

$$9 \times 32 + 29 = 317 \times 16 = 5072$$

(2 wire planes per chamber, 8 chambers) capacitors in Station 3 North.

The process involves the use of a modified 30 watt soldering iron that has a custom tip attached (see attached photos). The soldering iron tip slips over the HV-cap, once heat is applied the capacitor becomes loose and can be easily removed. Previously, only capacitors in octants which are accessible without internal scaffolding, ladders or other supplemental means (i.e. only capacitors which can be easily reached when standing on the base super structure) were removed. This permit allows the use of a low stable work platform to reach capacitors in higher elevations. (Note: future scaffolding will require a separate permit and review by C-A safety personnel.)

MMN MuTr Capacitor Removal Procedure Platform Installation and Inspection

1. The platform is to be made of standard 1.75" heavy wall aluminum tubing and utilizes base brackets permanently installed on the lower octant of the north magnet. The East and West bracket pairs are about 9' apart. On top will be (2) 10' steel unistrut beams which will support a section of 3/4" plywood. This temporary platform allows you to work on the top of the North MuTr station 3 octant 7.



2. The average height of the platform above the slanted section of the Magnet structure is 29.25". Therefore a handrail is not required.

3. the plywood is only 3' or so long, so it only covers a small portion of the 10' span. You can loosen the screws and slide the board over to the other side.





A support under the end of the plywood, using a swivel mount screwed into the wood, is provided for added stability/rigidity. A swivel mount on the bottom screws into a piece of plywood that rests against a 1" steel ledge underneath the cable tray

MMN MuTr Capacitor Removal Procedure

The procedure is identical to the procedure described in work plans SS-2007-248 and SS-2007-249 to which this document is a supplement.